# Plasma Science and Fusion Center

Massachusetts Institute of Technology

# Institutional Issues


## Miklos Porkolab

## Director


**FY2008 OFES Budget Meeting**
**March 14,15, 2006**
**Gaithersburg, Md**

# PSFC Budget Chart by Divisions, OFES Funding Only

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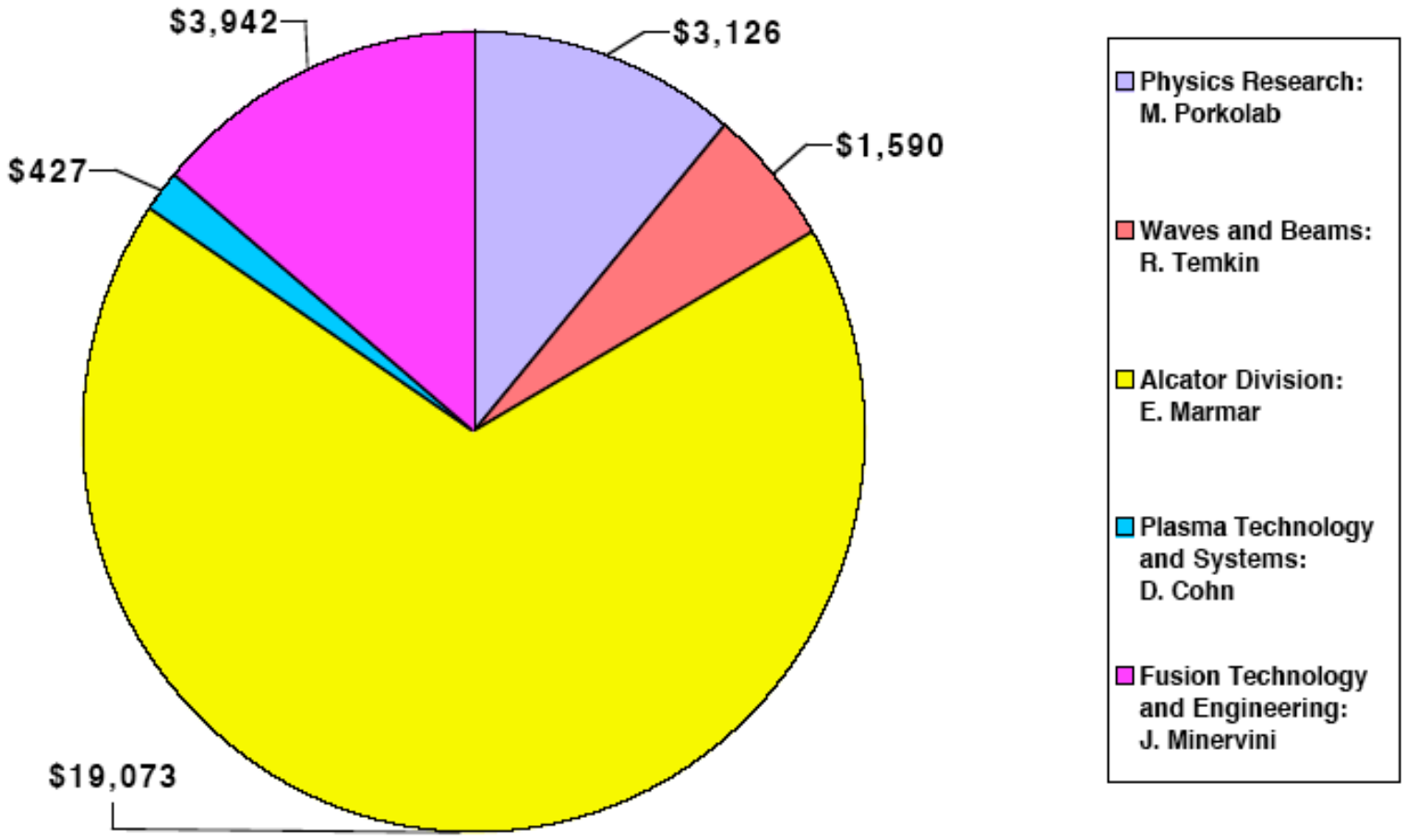
PSFC OFES FY06 FUNDS (in thousands): TOTAL $28,158



# Total Number of Graduate Students at the PSFC, by Year

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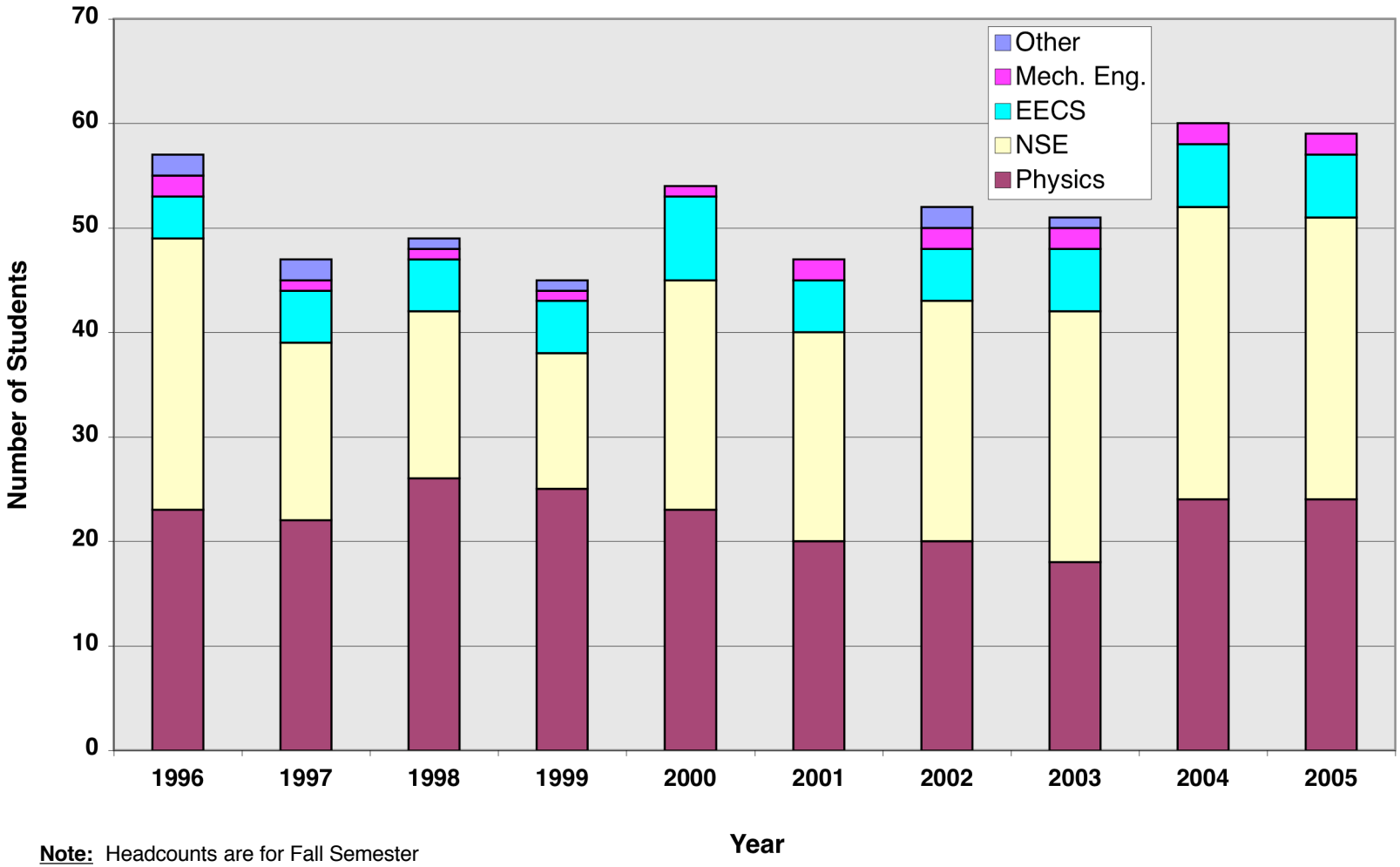


**Note:** Headcounts are for Fall Semester

# Funding Issues for the Theory Program

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- Theory budgets have been stagnant for years
- Small increase in funding from 2 SciDACs (~$100K) maintains staff but $50K decrease in theory grant will force letting one student go

* 3 theory graduate students remain at present-unable to take on new students
* Theory needs a way to guarantee support for 1 new grad student/year
* SciDACs normally not an appropriate way to support theory students

# Upgrading the Marshall Computer Cluster Will Greatly Improve the PSFC Computing Capability

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* MIT invested $41K to upgrade the air-conditioning system
* DoE is contributing $75K ($44K in FY06 and $31K in FY07)
* PSFC contributing $45K, C-Mod contributing $30K
* C-Mod, PSFC and theory gives 1.5 days/wk hardware support
* $150K total investment for a system equivalent to ~512 NERSC seaborg processors will greatly improve the computing support for SciDAC, theory, experiment and collaborations at the PSFC

# 8% Budget Cut for LDX

**Jay Kesner (PSFC) and Mike Mauel (Columbia University) PIs**

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- Experiments began 8/04 & have achieved beta~20%. Fully levitated experiments in final preparation.

- Reduced funding in FY07 will eliminate 2 of 4 PhD student slots.

# Reconnection Experiment in the new VTF Closed Field Configuration: Connection to Fusion and Space Physics

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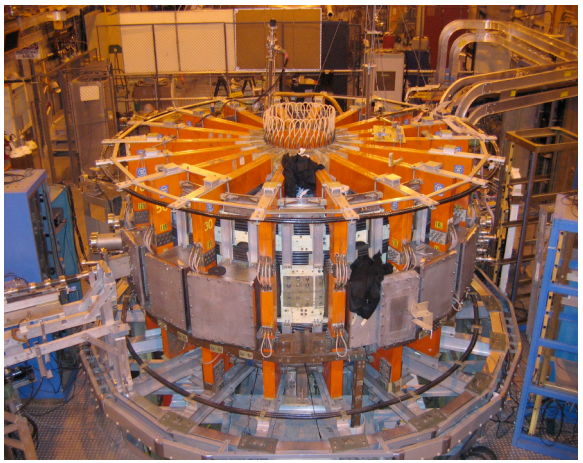
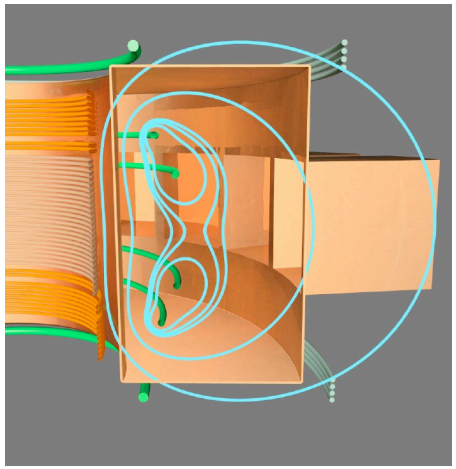
(A)

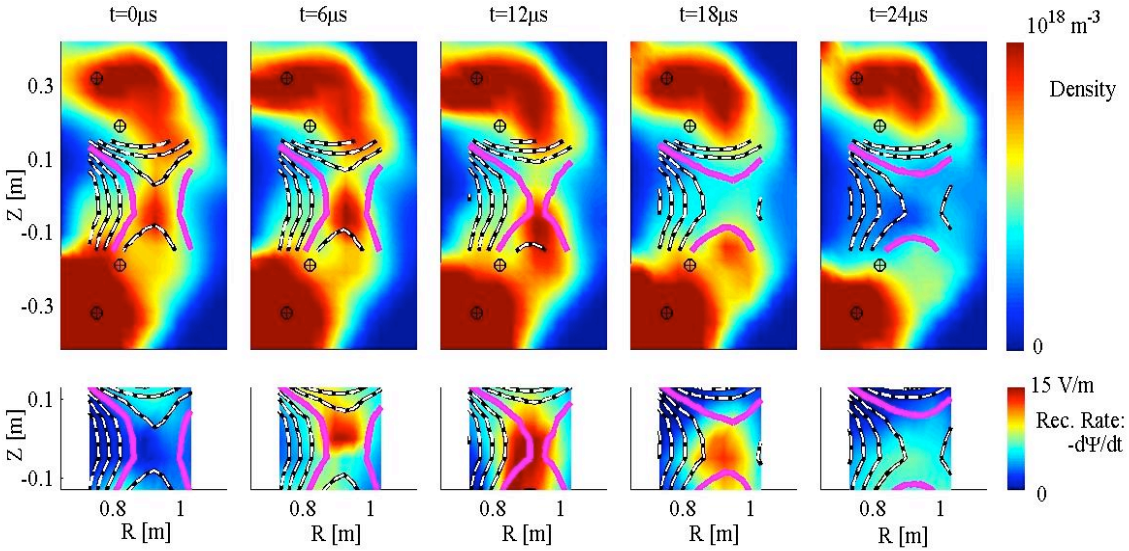


(B)



**Jan Egedal-Pedersen, PI, new Assistant Professor in the Physics Department at MIT, submitted a proposal for the DOE Junior Faculty Award to continue this work on VTF**

(C)




**The first measurements of the plasma density, magnetic field and reconnection rate during a spontaneous reconnection event.**

# WAVES AND BEAMS DIVISION
# ECH Program Plans FY07/FY08

- **FY07 Plans for MIT:**
  - **VLT Funding down from $475k in FY06 to $180k in FY07**
  - **1 Student retained, 3 terminated.**
  - **Gyrotron lab operating time restricted.**
  - **International collaborations terminated.**
- **FY07 Plans for CPI Industrial Gyrotron Development:**
  - **Funding (pass through) to CPI reduced to zero.**
  - **End of pioneering, world leading program in gyrotron R@D.**
  - **No engineering support for DIII-D ECH gyrotron system.**
  - **Major issue: negative impact of visibility to other fields (outreach), including: Electron Devices; Microwave Theory / Techniques; Infrared and Millimeter Waves.**
- **FY08 Plans for MIT:**
  - **Continuing research on gyrotrons and transmission lines at reduced levels, supporting domestic and international programs, including ITER**

# MIT REQUESTS for FY07/FY08

- **ECH : Restore funding (+$295k) for MIT ECH program, to support the domestic, ITER and international fusion programs.**
- **Restore industrial (CPI) funding (+$540k) to support the domestic and international programs.**

# Fusion Technology & Engineering Division

## Joe Minervini, Head

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- VLT magnets past base program focused on basic technology R&D and not specifically ITER related
- Major effort heavily focused in FY05-06 on US ITER Baseline Development using ITER Prep and OPC Funds
- Primary focus is in-kind contribution of entire Central Solenoid + CS Structure + 8% of TF Conductor
- Ramp in FY07 and beyond with ITER CS construction
  - **Budget Guidance**
    - **VLT Base**
      - **FY07 Request: $904K ⇒ Guidance: 0**
      - **Leads to complete elimination of base magnet technology program**
      - **Loss of 5 graduate students, 1 research staff and 1 technician**

# Fusion Technology and Engineering Division Budget Request for FY 07/FY08

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- **Magnets : Restore funding (+$904K) for MIT base magnets program to support the domestic, ITER and international fusion programs.**
  - **Fusion magnet technology in the US will completely end once ITER development is completed in about 2 years**
  - **Graduate students (5) should be supported for several years, at least to complete their Ph.D. Theses.**

- **An ITER construction project is not a substitute for a viable base magnet technology program.**